

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 09/556,349

REMARKS

Claims 1-17 and 31-47 have been examined on their merits.

Applicants herein cancel claims 2-6, 8, 10-17, 32-36, 38 and 40-47 without prejudice and/or disclaimer.

Applicants herein add new claims 73-106. Support for the new claims 73-106 can be found, for example, in the originally filed claims as well as the specification. Entry and consideration of the new claims 73-106 is respectfully requested.

Claims 1, 7, 9, 31, 37, 39 and 73-106 are all the claims presently pending in the application.

1. Claims 1-5, 11, 12, 31-25, 41 and 42 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Ratakonda (U.S. Patent No. 5,956,026). The rejection of claims 2-5, 11, 12, 32-35, 41 and 42 is now moot due to their cancellation. Applicants traverse the rejection of claims 1 and 31, and insofar as the rejection might apply to new claims 73-106, for at least the reasons discussed below.

To support a conclusion that a claimed invention lacks novelty under 35 U.S.C. § 102, a single source must teach all of the elements of a claim. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). A claim is anticipated only if each and every element as set forth in the claim is found either expressly or inherently in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). A single source must disclose all of the claimed

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elements arranged as in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). A proper anticipation rejection requires that every element of the claim be found “in a single prior art reference.” See *In re Robertson*, 169 F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950 (Fed. Cir. 1999). Thus, the cited reference must clearly and unequivocally disclose every element and limitation of the claimed invention.

Ratakonda fails to teach or suggest at least the application of singular value decomposition to a matrix comprised of feature vectors from a set of frames from an input video sequence. Ratakonda further fails to teach or suggest the projection of the matrix on a refined feature space representation, wherein the positions of the projections represent approximations of visual changes in the set of frames, as recited in claim 1. Ratakonda discloses, *inter alia*, a hierarchical clustering of keyframes used for automatic video summarization, and the technique of Ratakonda is acknowledged as prior art in the document submitted with U.S. Provisional Application No. 60/167,230 (pg. 2). In contrast, the present invention recites applying singular value decomposition as a metric that is used to assess the degree of video changes in an input video stream. Specifically, a matrix is computed using singular value decomposition, whereby the matrix is projected onto a refined feature space, and the positions at which constituent frames are projected correlates with the degree of visual changes in the video stream. There is no teaching or suggestion in Ratakonda of using singular value decomposition as recited in claim 1 for video summarization.

Based on the foregoing reasons, Applicants submit that Ratakonda fails to teach or suggest all of the claimed elements as arranged in claim 1. Therefore, under *Hybritech* and

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Richardson, Applicants submit that claim 1 allowable, and further submit that new claims 73-89 are allowable as well, at least by virtue of their dependency from claim 1. Applicants respectfully request that the Patent Office withdraw the § 102(e) rejection of claim 1.

With respect to independent claim 31, Applicants submit that claim 16 is allowable for at least reasons analogous to claim 1. Thus, under *Hybritech* and *Richardson*, Applicants submit that claim 31 is allowable, and further submit that new claims 90-106 are allowable as well, at least by virtue of their dependency from claim 31. Applicants respectfully request that the Patent Office withdraw the § 102(e) rejection of claim 31.

2. Claims 17 and 47 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ratakonda in view of Lim (U.S. Patent No. 6,574,378). The rejection of claims 17 and 47 is now moot due to their cancellation.

3. Claims 6-9 and 36-39 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ratakonda in view of Lim. The rejection of claims 6, 8, 36 and 38 is now moot due to their cancellation. Applicants traverse the rejection of claims 7, 9, 37 and 39 for at least the reasons discussed below.

Claims 7 and 9 depend from claim 1, and incorporate all the recitations of claim 1 by virtue of their dependency from claim 1. The deficiencies of Ratakonda with respect to claim 1 are discussed above, and are incorporated here by reference. With respect to Lim, Applicants reiterate their previous arguments that Lim is silent about using singular value decomposition to

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a feature frame matrix to obtain a refined feature space representation of an input video sequence, as recited in claim 1. Furthermore, no motivation to combine Lim and Ratakonda is present because Lim discloses, *inter alia*, general image indexing (*i.e.*, all images can be different from one another) as opposed to the video summarization (*i.e.*, images are related to one another temporally) recited in the claimed invention. Lim summarizes each image for purposes of a query-based search and therefore does not “summarize” a group of images. Since Lim fails to cure the deficient teachings of Ratakonda with respect to claim 1, Applicants submit that claims 7 and 9 are allowable at least by virtue of their dependency from claim 1. Therefore, Applicant respectfully requests that the rejection of claims 7 and 9 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Claims 37 and 39 depend from claim 31, and incorporate all the recitations of claim 31 by virtue of their dependency from claim 31. The deficiencies of Ratakonda with respect to claim 31 are discussed above, and are incorporated here by reference. With respect to Lim, Applicants reiterate their previous arguments that Lim’s use of singular value decomposition is different from the claimed application of singular value decomposition, as recited in claim 31. Since Lim fails to cure the deficient teachings of Ratakonda with respect to claim 31, Applicants submit that claims 37 and 39 are allowable at least by virtue of their dependency from claim 31. Therefore, Applicant respectfully requests that the rejection of claims 37 and 39 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

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PATENT APPLICATION

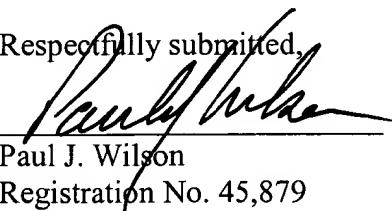
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4. Claims 10 and 40 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ratakonda in further view of Uchihachi *et al.* (U.S. Patent No. 6,535,639). The rejection of claims 10 and 40 is now moot due to their cancellation.

5. Claims 13-16 and 43-46 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Ratakonda in view of Castelli *et al.* (U.S. Patent No. 6,122,628). The rejection of claims 13-16 and 43-46 is now moot due to their cancellation.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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